An Unusual Case of Non-small Cell Lung Cancer Presenting with Renal Angle Pain and Hematuria

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Abstract: A 53-year-old woman was referred urgently to the urology department with a history of worsening right renal angle pain and associated hematuria. Further investigations revealed the presence of a primary non-small cell lung cancer (NSCLC) invading the posterior chest wall with an associated vaginal metastasis. To our knowledge, this is only the second case report in the literature of a vaginal metastasis from NSCLC.

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A 53-year-old postmenopausal woman presented to her general practitioner with a 4-month history of worsening right flank and renal angle pain. Urine dipstick confirmed the presence of microscopic hematuria, but a midstream specimen of urine showed no evidence of infection. Her pain was so severe that she was urgently admitted to the urology department.

She had previously been very fit and well, with no significant medical history. She was a smoker with a 20 pack/year history. Clinical examination was unremarkable except for localized tenderness in her right upper quadrant. Initial investigations including ultrasound of the abdomen and intravenous pyelogram were entirely normal, but increasing pain and the development of vaginal spotting prompted further evaluation with contrast-enhanced computed tomography (CT) of the thorax, abdomen, and pelvis. This revealed a large right posterior chest wall mass that destroyed the posterior aspects of the 9th to 11th ribs and invaded the paravertebral muscles (Figure 1), and there was associated mediastinal adenopathy. The liver and adrenals were normal, and no other bony lesion was identified. However, a rim-enhancing subepithelial mass was seen in the right lateral wall of the vagina (Figure 2). Gynecological examination confirmed the clinical presence of a subepithelial vaginal mass, which was biopsied. An ultrasound-guided biopsy of the chest wall mass was also performed.

Histopathological examination of the chest wall biopsy specimen confirmed the presence of a poorly differentiated carcinoma. Immunohistochemical staining was strongly positive for TTF-1, cytokeratin AE1/AE3, and epithelial membrane antigen and was focally positive with p63. This profile was highly suggestive of a non-small cell lung primary, probably a squamous carcinoma in view of the p63 positivity. The vaginal specimen also revealed a poorly differentiated carcinoma with a microscopic appearance very similar to the chest lesion. Immunostaining was again strongly positive for TTF-1 and cytokeratin AE1/AE3 but was negative for cytokeratin 5, S-100, and estrogen receptor. These immunohistochemical profiles, in association with the clinical and radiological findings, led to a diagnosis of stage IV NSCLC with a single vaginal metastasis (T3, N2, M1).

The patient received palliative radiotherapy to the chest wall mass (17 Gy in two fractions, 1 week apart) for pain relief, followed by four cycles of carboplatin and gemcitabine chemotherapy. Despite significant symptomatic improvement of both pain and vaginal bleeding, a repeat CT after the fourth cycle of chemotherapy showed slight progression of the disease. Because of her good performance status, she was offered second-line chemotherapy with docetaxel, but the patient felt so well and had good quality of life, so she declined until symptomatic progression. Unfortunately, 6 months after initial diagnosis, the patient died of severe pneumonia.

DISCUSSION

This case illustrates a very unusual presentation of NSCLC. The pain from the posterior chest wall disease associated with microscopic hematuria from the vaginal metastasis prompted a clinical suspicion of renal tract pathology and urgent referral to the urology department.

Most vaginal neoplasms are metastases or represent direct extension from other genital tumors, e.g., cervical cancer. After the ovary, the vagina is the second most common site of metastases in the female genital tract.[1] Most vaginal metastases originate from other gynecological malignancies, mainly endometrial carcinoma, whereas metastases from extragenital cancers are uncommon. The most frequent extragenital tumors that metastasize to the vagina are carcinomas of the rectum, colon, and breast. Other tumors reported to metastasize to the vagina include malignant melanoma and cancers of the kidney, pancreas, and bladder. The literature consists mainly of sporadic case reports. To our knowledge, only one case of a vaginal metastasis from lung cancer has previously been described, and this occurred on

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FIGURE 1. Contrast enhanced CT scan of the thorax showing right chest wall invasion with rib destruction and paravertebral muscle involvement.

FIGURE 2. Contrast enhanced CT scan of the pelvis showing a rim enhancing mass in the right lateral wall of the vagina.

relapse of disease, not at presentation.[2] Ours is the first recorded case of lung cancer presenting with a vaginal metastasis.

Primary vaginal cancer is rare, comprising only 2% to 3% of all gynecological malignancies. Of the cases, 80% to 90% are squamous cell carcinomas. Other cell types include adenocarcinoma (5%–10%), sarcomas (3%), small cell carcinoma, and malignant melanoma.[3]

In this case, the lung and vaginal lesions were detected synchronously. Although the possibility of a primary vaginal cancer metastatic to the chest was considered, the immunostaining was extremely useful in confirming the pulmonary origin of both the chest wall and vaginal lesions. In particular, TTF-1 is a highly sensitive and specific marker for primary lung cancer.[4,5]

In terms of clinical management, we noted that the vaginal bleeding from the metastasis stopped soon after commencement of systemic chemotherapy. A recent case report has also described the successful use of external beam radiotherapy to control bleeding from vaginal metastases.[6]

Cases of vaginal metastases from lung cancer may be seen more frequently as the worldwide incidence of lung cancer in women continues to increase and because the routine use of fused positron emission tomography and computed tomography (PET-CT) may identify asymptomatic vaginal involvement.

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